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**Fourth North American, Central American and Caribbean Working Group Meeting  
(NACC/WG/4)**

Ottawa, Canada, 24 to 28 March 2014

**Agenda Item 3: Follow-up on the NAM/CAR Regional Performance-Based Air Navigation  
Implementation Plan (NAM/CAR RPBANIP) Progress  
3.3 ANI/WG and other regional group progress reports**

**FLIGHT PLANNING QUALITY IMPROVEMENT INITIATIVE IN THE NORTH AMERICAN,  
CENTRAL AMERICAN AND CARIBBEAN REGION**

(Presented by United States)

**EXECUTIVE SUMMARY**

This paper presents information regarding the need to improve the quality of flight plan data being submitted into the ATC flight data systems and relayed through the en route, oceanic and terminal Inter-facility Data Communications systems in support of flight in domestic and international airspace.

<i>Strategic Objectives:</i>	<ul style="list-style-type: none"><li>• Safety</li><li>• Air Navigation Capacity and Efficiency</li><li>• Environmental Protection</li></ul>
<i>References:</i>	<ul style="list-style-type: none"><li>• NACC/WG/3</li></ul>

**1. Introduction**

1.1 Air Traffic Service (ATS) Interfacility Data Communications (AIDC), the North American Common Interface Control Document (NAM ICD) or similar automation, can provide the means by which automated data exchange can be harmonized between ATSUs providing air traffic service in, and adjacent to Flight Information Regions (FIR). Within these automation efforts the data which travels through the interfaced systems are often far removed from the controller display and the cockpit, but these end users are dependent on the accuracy of this critical information.

1.2 The increasing traffic demand between FIRs drives the need to improve efficiency and maintain the accuracy for the ATC providers. Developing a harmonized process and defining protocols for exchanging data between multiple States/Territories/International Organizations within and across regions is critical to achieving efficiency through automation. ICAO's release of traffic growth projections for regions around the world in 2012 identifies the growth rate for Latin America and the Caribbean for years 2013 and 2014 as 7.7% and 8.2% respectively. These numbers exceed the projected average for the world which is recorded as 6% for 2013 and 6.4% for 2014. According to the Federal Aviation Administration (FAA), similar growth numbers are projected for the region up to the year 2032.

Region of airline registration	Average annual growth		Forecast	
	2001-2011	2012	2013	2014
	(%)	(%)	(%)	(%)
Europe	6.0	4.2	4.4	4.8
Africa	6.0	5.5	6.2	6.0
Middle East	14.4	9.5	10.2	11.0
Asia/Pacific	6.4	8.0	8.6	8.8
North America	2.6	2.3	3.1	3.5
Latin America and Caribbean	4.7	7.0	7.7	8.2
<b>World</b>	<b>5.3</b>	<b>5.4</b>	<b>6.0</b>	<b>6.4</b>

*Table 1 - ICAO Projected Traffic Growth Rates by Region*

1.3 The U.S. and NAM ICD member states have realized automation gains that provide significant safety and efficiency benefits. The example of extending automation capability in the North American region is detailed in other recent papers from the last two years recounting the Miami Air Route Traffic Control Center (ARTCC) 2011 automated data exchange interface with the Havana Area Control Center (ACC). While the implementation of the automated data exchange capability provides significant benefits to the controller and to a facility's ability to support current and future air traffic there is one area of concern that potentially touches facilities across many regions. This issue revolves around the quality of the flight plans being filed and the continuity of the data which follows a flight through international ATC systems. Flight plans received before the Miami ARTCC – Havana ACC interface was automated were processed manually. Once automated the flight plans are received by automation systems which are much less forgiving of format and syntax and errors. Many errors in filed flight plans which may have gone undetected for years within a manual system are now problematic within automation. When filed information is in conflict from different flight plan versions, it requires manual intervention and correction else it erodes the benefits of automation. Additionally, multiple flight plans received for the same flight must be manually parsed and edited to ensure the correct data is being entered for internal system use and forwarded by the computer system for downstream facilities. Conflicting information between those flight plans filed at the departure airports and those filed by the airlines or commercial filers are often seen. Miami ARTCC has been dealing with these types of flight plan issues for years but they were to the Havana ACC automation which has to process conflicting data and parse out flight plan errors.

1.4 As early as October 2009, in the ICAO Eastern Caribbean Working Group Thirty-One (E/CAR/WG/31), a working paper was provided titled "Missing Flight Plans" authored by France from experiences within the Piarco FIR. An ad hoc AIS group in this same meeting suggested an initiative to conduct an analysis to determine the extent of the identified problem. The group recommended that an investigation to include duplicate flight plans also be included with the named missing flight plan issue.

## 2. Discussion

2.1 Within ICAO's North American, Central American and Caribbean Working Group (NACC) Thirty-Second E/CAR/WG Meeting, June 2010, IP/10 was presented detailing the deficiencies associated with "Missing and Duplicate Flight Plans" within the Piarco FIR. The main causes of duplication cited by the Piarco analysis of flight plans were the issuing of flight plans by multiple originators, the multiple transmissions of flight plans by the same originator and the re-issuing flight plans due to changes. The causes accounted for 67%, 32% and 24% respectively. There was some overlapping causes as noted by the percentages.

2.2 As recently as the Third NACC Working Group Meeting (NACC/WG/3), held in Guatemala City, Guatemala 9-13 May 2011 the issue was broached again. As a result of a working group held at that meeting, actions were developed which are intended to improve the flight plan quality in the Caribbean, Central and South America airspace. Although the intent was well meaning, the issues associated with errors/duplication of flight plans have continued without noticeable improvement. It was thought that the measures may have not been specific or aggressive enough in identifying deficiencies and addressing the actions necessary to resolve the problems. In the NACC/WG/3 meeting, an ad hoc working group met to discuss the topic of "*Actions to Avoid Errors, Missing and Duplication of Flight Plans*". From this discussion came Conclusion 3/3 that NAM/CAR States/Territories and COCESNA implement actions to avoid errors, missing and duplication of flight plans. Nine actions were listed (Table 2) to aid this effort but realistically the actions were not comprehensive enough in themselves to solve the identified problems. The text from that meeting read:

**"NACC/WG/3  
CONCLUSION 3/3**

***ACTIONS TO AVOID ERRORS, MISSING AND DUPLICATION OF  
FLIGHT PLANS***

*Errors, Missing and Duplication of Flight Plans*

3.2.17 *The Meeting recognized that there are cases where there is no specialized personnel to perform the functions of dispatcher and flight control. In some cases, the dispatcher Aeronautical Information Service (AIS) functions are performed by personnel assigned who has not been sufficiently trained for this function. Other issues identified are loss, errors and duplication of flight plans between the adjacent units which impacts safety.*

3.2.18 *The negative impact that this issue could cause in safety management and ATS efficiency, the Meeting considered that States, Territories and International Organizations should analyze this problem and urgently solve it to ensure the safety and optimize efficiency of air navigation services. Therefore, the Meeting adopted the following:"*

<b>Conclusion 3/3 Actions Table 2</b>	
a)	Publish in the AIP the corresponding procedures in accordance with ICAO SARPs for the coordination, validity and update of changes in flight plans
b)	update domestic provisions on flight plan message transmission in accordance with ICAO Doc 4444 and the CAR/SAM Interface Control Document (ICD) for data communications between ATS units, approved by GREPECAS
c)	publish the appropriate address in the AIP for the flight plan transmission

<b>Conclusion 3/3 Actions</b>	
<b>Table 2</b>	
d)	Update letters of agreement (LOAs) between adjacent ATS units for flights that operate from one FIR to an adjacent FIR
e)	provide the appropriate training so ATC personnel can provide the ATC clearances according to ICAO Doc 4444, PANS-ATM
f)	coordinate with operators to ensure the timely coordination for data changes and validity of a specific flight plan
g)	encourage that dispatch offices have a sufficient number of qualified experts for proper flight plan coordination and follow-up
h)	consider the implementation of electronic applications for the pre-departure clearance (PDC)
i)	provide the ICAO NACC Regional Office the implementation progress report of the previous actions

2.3 The conclusions/actions which came out of the NACC/WG/3 did not provide the activity tasks which would lead to corrective behaviour where the issues originated. An additional task perhaps should have been:

2.3.1 Convene Flight Plan Quality Improvement Initiatives to identify current flight planning errors through internal and external methods and work toward analysing the deficiencies, identifying their causes with the goal of mitigating and/correcting those causes with improved procedures and quality controls.

2.4 The first locally originated Flight Planning - Quality Improvement Initiative (FP- QII) Meeting was held in March 2012. The group consisted of the United States, Mexico and Cuba. This ad hoc group met in response to the proliferation of flight plan errors and conflicting data which impacted safety of flight and integrity of flight data being introduced into interfaced ATC systems. The FP-QII began their first ad hoc meeting by asking the question “What is the issue we are trying to solve with Flight Planning Quality Improvement?” The general answer was summarized as:

- The goal of ‘preserving the integrity of the flight plan data by working to identify and correct the problems being caused by the recurrence of flight plan errors and duplication of flight plans’ was identified. The risk of allowing incorrect, redundant and incomplete data to pass through the interfaced ATC systems of the United States, Mexico and Cuba was deemed too great to adopt a passive approach in its resolution.
- Improvement discussions within the FP-QII recognized a wider dissemination of a solution was needed. The adverse impact on quality of the data being input and processed by international ATC automation systems can nullify many of the benefits associated with automating interfaces. The goal of FP-QII was localized within the NACC but similar efforts within other regions would be needed to provide awareness and provide a more collective effort in identifying flight planning errors, correcting those errors at the source and mitigating the impact of problems associated with multiple flight plan submission.

2.4.1 It was agreed that errors and duplicates have caused safety risks, increased work load and resulted in negative impacts to efficiency. The impacts the errors and reoccurring nature discovered in the data analysis demands an active approach be taken to pursue solutions. Specific instances of errors which yield safety issues have occurred and include misstatement aircraft type, improper wake turbulence category, and erred route and equipment capabilities. Omission of data filed in an original flight plan by a subsequent flight plan is also an error which can have an impact as great as flaws in the data. Specific examples associated with flight plan errors and duplication have been recorded with aircraft transiting or landing in U.S., Mexican and Cuban airspace after originating in South and Central America. In these cases where data is being received with embedded errors, original filings have been compromised and data processing decisions will have to be evaluated. The challenges associated with flight planning have been discussed within the FP-QII meetings and it was agreed any progress toward reducing flight planning errors, as well as duplicate flight plans would be of significant benefit. The results identified in the 2009 Piarco FIR analysis of flight plans appears to still be current as the same type of problems can be easily found. The filing of flight plans by multiple originators, the multiple transmissions of flight plans by the same originator and improper re-issuing of flight plans due to changes are not only 2009 issues but are still causing problems in 2014.

2.4.2 Out of discussions of the FP-QII tasks identified that needed to be worked were:

- A comprehensive solution must include quality control initiatives for both filers and filing services to improve the transmitted data to conform to ICAO 4444 standards and conventions.
- The quality control solution must also be a collaborative procedures effort, one aimed at reducing the number of flight plans in error and reducing instances of multiple flight plans for the same flight.

2.4.3 An interesting note is that the issues identified were independent of the 2009 Piarco FIR study yet are very similar. It was further offered that safeguarding the integrity of the data was of primary importance and that the quality of data being introduced into individual ATC systems and forwarded into the collective systems must be maintained at a high level. Havana noted that they have to manually compare the original FPL from the airline operator against the second one received from the point of departure. They are considering the information coming directly from the airline operator, as more valid versus the information from another source due to the number of errors being detected in the second flight plan. The group was asked if it was possible to consider the air carrier's flight plan as the most reliable method to be used to validate the information from suspect sources. This is contrary to normal operations as in most cases the most recently filed flight plan is considered the most valid since it should contain the most recent information. This procedure would be a departure from the standard course of action but may be necessary to mitigate the impact of flight data with errors. This procedure is under evaluation by the individual interfaced facilities to weigh the risk and benefits of this approach. It was noted that there are supplementary issues in regard to changing flight plans and standardizing how flight plan filers maintain the flight plan but are at a lower priority tier.

2.5 The impact of a retransmitted flight plan with errors is offered with the example of UPS flight 357, B763/H, flying from Central America to Miami FL on 18 March 2012. The flight plan was originally filed by the airline's central dispatch office in the United States.

2.5.1 The route of flight requires filing with the Flight Information Region (FIR) between point of origin and destination. This is accomplished as was such a filing from UPS Airline Operations Center (AOC). Havana ACC and Miami Air Route Traffic Control Center (ARTCC) have both flight plans, the flight plan from the point of departure being the most recently filed. After leaving the departure FIR the flight enters the Havana FIR. Both flight plans were filed via AFTN and accepted into the Havana ATC system, they are not duplicates since there is different information associated with each. Using the information in latest flight plan would be the logical course of action since it would be the most recent and should have the most current information. The conflict in the aircraft types; B752 versus B763, goes unnoticed as the Flight Plan Message (FPL) is received via AFTN and accepted into the system. The separation standard for both aircraft in the en route radar environment is 5 miles. Automation sends the active data via the current flight plan message (CPL) to Miami. The aircraft is worked through Miami ARTCC airspace and descends in preparation for landing at Miami International Airport via the CURS01 STAR. UPS357 is handed off between the Miami Center and Miami Approach Control and the ARTCC Host Automation sends the Miami ATC automation system as **a B757 not a B767**. The Safety Issue now is more critical as heavy jet separation is required in the terminal environment and wake turbulence is being provided for a non-heavy B757 aircraft.

2.5.2 Retransmitted/Duplicate Flight Plans - The cited example is not an isolated case and a number of like problems continue to be associated with countries that file flight plans in addition to those filed by the airline or flight plan filing services. The Piarco FIR study of 2009 cited similar examples of what they called duplicate flight plans; the reference is often a misnomer since there are often significant differences. **Multiple flight plans are often referred to as ‘duplicates’ or ‘retransmitted’** since they are for the same aircraft and for the same flight. Examples of the many types of errors are plentiful.

2.5.3 Flight plan errors and duplication/retransmission of flight plans are interconnected problems as multiple flight plans with conflicting information about the same flight can degrade processing efficiency and safety of flight. As can be seen, the issues described in this paper span international boundaries and will require a collaborative approach to identify the causes which are behind the proliferation of errors. We can identify the specific deficiencies associated with the flight plans but will need the help of ICAO, the ANSPs, and the local filing authorities to improve the quality of flight plans being routed through the international flying environment.

## 2.6 *Current Flight Plan Improvement Initiatives:*

2.6.1 **During the First NAM/CAR Air Navigation Implementation Working Group Meeting** in 2013 it was agreed that the Air Traffic Services Inter-Facility Data Communication (AIDC) Implementation Task Group prioritize and implement necessary action with the ICAO Secretariat and enlist users to follow-up on mitigation/solution measures to the Flight Planning problem and notify the ANI/WG of results as soon as possible.

- The AIDC ad-hoc group was formed to follow up on the issue of erroneous flight plans presented an analysis of the statistics collected from Cuba, the E/CAR region, COCESNA and Costa Rica. In this analysis there are several recommendations, including the formation of an FPL monitoring group to oversee the implementation of mitigation/corrective measures.
- It has been determined a draft action plan will be created based on the recommendations of the document mentioned above.

- As stated in the Working Group Task Force summary it is suggested a FPL monitoring group be formed, with a point of contact in each State of the NAM/CAR region, to follow up on reported errors and duplication of Flight Plans and assure that they are being addressed.

### **3. Conclusion**

3.1 Please note the information presented in this paper and support the initiatives to correct flight plan data being filed and processed within ATC systems. If the region is to use automation to safely support the projected growth of the air traffic projected for the future in and adjacent to the NACC it is imperative the quality of the flight planning data must be improved and maintained.

— END —